

IN THE CLAIMS

Please cancel Claims 2 and 19 without prejudice or disclaimer.

Claim 1 (currently amended): A buck regulator switching power supply, comprising

a switching power supply circuit having an input and an output, a high side FET and a low side device, a bootstrap capacitor coupled to the high side FET;

further comprising a controller coupled to and sensing a voltage of the bootstrap capacitor, the controller selectively recharging the bootstrap capacitor as a function of the sensed bootstrap capacitor voltage, and

further comprising the controller selectively controlling the low side device as a function of the sensed bootstrap capacitor voltage independently of the high side device.

Claim 2 (cancelled).

Claim 3 (currently amended): The switching power supply as specified in Claim 2 3 wherein the low side device is a FET.

Claim 4 (currently amended): The switching power supply as specified in Claim 2 3 wherein the low side device is a ~~bipolar~~ switching device.

Claim 5 (original): The switching power supply as specified in Claim 1, wherein the controller comprises a comparator.

Claim 6 (original): The switching power supply as specified in Claim 5 wherein the comparator compares the bootstrap capacitor voltage to a reference voltage.

Claim 7 (currently amended): The switching power supply as specified in Claim 2 3 further comprising a gate driver controllably driving the high side FET as a function of the controller.

Claim 8 (original): The switching power supply as specified in Claim 7 wherein the controller also couples a charged side of the bootstrap capacitor to the high side FET gate when driving the high side FET.

Claim 9 (original): The switching power supply as specified in Claim 8 wherein the controller couples the non-charging side of the bootstrap capacitor to ground during charging of the bootstrap capacitor.

Claim 10 (original): The switching power supply as specified in Claim 8 further comprising a switch selectively coupling the input to the charging side of the bootstrap capacitor during a charging cycle.

Claim 11 (original): The switching power supply as specified in Claim 7 wherein the low side device is enabled anti-phase with the highside FET.

Claim 12 (original): The switching power supply as specified in Claim 11 wherein the low side device is a FET.

Claim 13 (original): The switching power supply as specified in Claim 11 wherein the controller also controllably drives the high side FET as a function of a voltage at the output.

Claim 14 (original): The switching power supply as specified in Claim 1 wherein an input to output ratio of the switching power supply is at least 95%.

Claim 15 (currently amended): The switching power supply as specified in Claim 14 wherein the ratio is at least 97%.

Claim 16 (original): The switching power supply as specified in Claim 15 wherein the ratio is about 99%.

Claim 17 (original): The switching power supply as specified in Claim 1 wherein the bootstrap capacitor is selectively recharged when the bootstrap capacitor become less effective due to a high duty cycle of the switching power supply.

Claim 18 (currently amended): A method of operating a buck regulator switching power supply, comprising the steps of:

sensing a voltage of a bootstrap capacitor; and

selectively recharging the bootstrap capacitor as a function of the sensed bootstrap capacitor voltage,

wherein the switching power supply has a high side FET and a low side device,
wherein the low side device is enabled to selectively recharge the bootstrap capacitor

as a function of the sensed bootstrap capacitor voltage independently of the high side device.

Claim 19 (cancelled).

Claim 20 (currently amended): The method as specified in Claim ~~19~~ 18 wherein the low side device is enabled to selectively recharge the bootstrap capacitor when the bootstrap capacitor becomes discharged and hence less effective due to a high duty cycle of the switching power supply.

Claim 21 (original): The method as specified in Claim 20 wherein the switching power supply has an input to output ratio of greater than 95%.

Claim 22 (original): The method as specified in Claim 21 wherein the switching power supply ratio is greater than 97%.

Claim 23 (original): The method as specified in Claim 22 wherein the switching power supply ratio is approximately 99%.